

REMARKS

Claims remaining in the present application are 1-33. The Applicants respectfully request reconsideration of the above captioned patent application in view of the remarks presented herein.

Allowable Matter

The Official Action indicates that Claim 16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants thank the Examiner for indicating allowable material.

35 U.S.C. § 102

Claims 1-14 and 19-33 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Chandrakasan et al. (US 20040183288, "Chandrakasan"). Applicants have carefully review the cited references and respectfully assert that Chandrakasan does not anticipate or render obvious embodiments in accordance with the present invention as recited in Claims 1-14 and 19-33.

Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation "adjusting a body bias voltage of said integrated circuit

under test to achieve a desired junction temperature of said integrated circuit under test” as recited by Claim 1.

The system of Chandrakasan “responds to one or more present operating conditions of a device, such as a present temperature or workload, to control power consumption of the device” [0013]. In other words, Chandrakasan teaches a system for “control(ling) power consumption of the device” utilizing “one or more present operating conditions of a device, such as a present temperature or workload” as inputs to the control system.

In marked contrast, embodiments in accordance with the present invention as recited in Claim 1 recite a method of utilizing power consumption and ambient temperature as inputs to control junction temperature. For example, as taught by Chandrakasan, power consumption is a controlled output, and as recited by Claim 1, power consumption is a controlling input. Applicants respectfully assert that one of ordinary skill in the art would understand a fundamental difference between the taught controlling power consumption and the recited controlling junction temperature.

For this reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

In addition with respect to Claim 1, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “measuring power

consumed by an integrated circuit under test” as recited by Claim 1. The rejection cites three sections of Chandrakasan as allegedly teaching this limitation. Chandrakasan [0075] teaches applying a supply voltage and two bias voltages based upon table lookups. Chandrakasan [0075] does not teach measuring power. It is appreciated that the cited reference does not teach measuring current as required to measure power. Therefore, Applicants respectfully assert that Chandrakasan [0075] does not teach or suggest this limitation.

Chandrakasan [0079] teaches table values may be determined from device measurements. Chandrakasan [0079] does not teach or suggest that such device measurements may include “power consumed.” Applicants respectfully assert that Chandrakasan [0079] does not teach or suggest this limitation.

Chandrakasan [0121] teaches a substrate biasing (control) loop selects a preferred body bias value. Chandrakasan [0121] does not teach measuring anything, including the recited “power consumption.” Applicants respectfully assert that Chandrakasan [0121] does not teach or suggest this limitation. Moreover, Applicants respectfully assert that Chandrakasan in its entirety is silent as to this limitation.

For this additional reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Further with respect to Claim 1, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “measuring an ambient temperature associated with said integrated circuit under test” as recited by Claim 1. Chandrakasan’s references to temperature are predominately to “device temperature” [0125] or temperature of a device [0013], [0024], [0050], [0079] *inter alia*. Applicants respectfully assert that one of ordinary skill in the art would understand Chandrakasan’s references to device temperature to refer to conventional measures of chip temperature, e.g., junction temperature and/or case temperature, but not to the recited “ambient temperature.”

Applicants respectfully assert that Chandrakasan does not contain the term “ambient.” Moreover, Applicants respectfully assert that Chandrakasan does not suggest measuring “ambient temperature.” For this further reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Claims 2-7 depend from independent Claim 1. Applicants respectfully assert that Claims 2-7 overcome the rejections of record as these Claims depend from an allowable base Claim, and respectfully solicit allowance of these Claims.

In addition with respect to Claim 4, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “wherein said measuring power comprises measuring current to said integrated circuit under test” as

recited by Claim 4. The citation, Chandrakasan [0113] may refer to measuring current, but the reference is in the context of monitoring current to detect an optimal operating condition based upon current changes [0115-0116].

Chandrakasan does not teach that “measuring power comprises measuring current to said integrated circuit under test” as recited by Claim 4.

For this additional reason, Applicants respectfully assert that Claim 4 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Applicants respectfully assert that Claim 8 overcomes the rejections of record for at least the rationale previously presented with respect to Claim 1, and respectfully solicit allowance of this Claim.

Claims 9-14 depend from independent Claim 8. Applicants respectfully assert that Claims 9-14 overcome the rejections of record as these Claims depend from an allowable base Claim, and respectfully solicit allowance of these Claims.

Applicants respectfully assert that Claim 27 overcomes the rejections of record for at least the rationale previously presented with respect to Claim 1, and respectfully solicit allowance of this Claim.

Claims 28-33 depend from independent Claim 27. Applicants respectfully assert that Claims 28-33 overcome the rejections of record as these Claims depend from an allowable base Claim, and respectfully solicit allowance of these Claims.

With respect to Claim 19, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “an ambient temperature sensor for determining an ambient temperature for a region proximate to said integrated circuit” as recited by Claim 19 for at least the rationale previously presented with respect to Claim 1. For this reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

In addition with respect to Claim 19, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “adjusting said body bias voltage of said integrated circuit to achieve a desired junction temperature of said integrated circuit” as recited by Claim 19 for at least the rationale previously presented with respect to Claim 1. For this additional reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Further with respect to Claim 19, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation:

a test controller for coupling said integrated circuit and coupling said current measuring device, said bias voltage supply and said ambient

temperature sensor, said test controller for implementing a method for reducing temperature variation among an integrated circuit during burn-in testing

as recited by Claim 19.

Applicants respectfully assert that Chandrakasan is silent as to “reducing temperature variation” as well as to “burn-in testing.” Furthermore, Applicants respectfully assert that Chandrakasan is silent as to “ambient temperature sensor” for at least the rationale previously presented with respect to Claim 1.

Applicants respectfully assert that absent at least these elements, Chandrakasan cannot and does not teach or suggest this limitation of Claim 19, and consequently does not anticipate nor render obvious Claim 19.

For these further reasons, Applicants respectfully assert that Claim 19 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Claims 20-26 depend from independent Claim 19. Applicants respectfully assert that Claims 20-26 overcome the rejections of record as these Claims depend from an allowable base Claim, and respectfully solicit allowance of these Claims.

Additionally with respect to Claim 26, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation “said test controller also comprises stimulating said integrated circuit for testing” as recited by Claim 26. The controller referred to in the citation [0122] “steps the supply voltage.” Chandrakasan’s controller does not stimulate “said integrated circuit for testing.”

For this addition reason, Applicants respectfully assert that Claim 26 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

35 U.S.C. § 103

Claims 15, 17 and 18 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Chandrakasan et al. (US 20040183288, “Chandrakasan”) in view of Cohen et al., (US 20050088137, “Cohen”). Applicants have carefully review the cited references and respectfully assert that Chandrakasan in view of Cohen does not render obvious embodiments in accordance with the present invention as recited in Claims 15, 17 and 18.

Applicants respectfully assert that the rejection in view of Cohen depends upon a claim of benefit to US Provisional Application 60/500,561, as the filing date of Cohen (9/3/2004) is after the priority date of the present application (3/1/2004). Consequently, it is the responsibility of the Examiner to demonstrate that the subject matter used to make the rejection is appropriately supported in

the relied upon earlier-filed application's disclosure. The Examiner is respectfully requested to provide citations to US Provisional Application 60/500,561 that demonstrate support of the rejections over Cohen, or to withdraw the rejections.

With respect to Claim 15, Applicants respectfully assert that Chandrakasan does not teach or suggest the limitation "measuring an ambient temperature in a region proximate to said integrated circuit" as recited by Claim 15 and alleged by the rejection, for at least the rationale previously presented with respect to Claim 1. Cohen does not correct this deficiency of Chandrakasan, nor does the rejection allege that it does. Consequently, neither Chandrakasan nor Cohen, alone or in combination, renders obvious this limitation recited by Claim 15.

For this reason, Applicants respectfully assert that Claim 15 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Independent of the question of the validity of Cohen's application as alleged prior art, Applicants respectfully assert that Cohen actually teaches away from embodiments in accordance with the present invention as recited in Claim 15. Cohen teaches measuring junction temperature and using junction temperature as in input to a control mechanism ([0017], Figure 1, *inter alia*). By this teaching, Cohen actually teaches away from the recited "computer implemented method of determining a junction temperature" that does not use a junction temperature measurement to determine a junction temperature.

For this additional reason, Applicants respectfully assert that Claim 15 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Claims 17 and 18 depend from independent Claim 15. Applicants respectfully assert that Claims 17 and 18 overcome the rejections of record as these Claims depend from an allowable base Claim, and respectfully solicit allowance of these Claims.

CONCLUSION

Claims remaining in the present application are 1-33. The Applicants respectfully request reconsideration of the above captioned patent application in view of the remarks presented herein.


Applicants have reviewed the following references that were cited but not relied upon and does not find these references to show or suggest the present claimed invention: US 2004/0083075 and US 2004/0108867.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,
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